



PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Stephan Schauz	Examiner:	Brian K. Talbot
Serial No.:	10/617,925	Group Art Unit:	1762
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For:	A METHOD FOR THE MANUFACTURE OF AN INJECTION MOLDED CONDUCTOR CARRYING MEANS		

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DECLARATION OF STEPHAN SCHAUZ UNDER 37 C.F.R §1.132

I, Stephan Schauz, declare the following:

1. I am the sole inventor of the above-identified patent application.
2. I am familiar with the Office Action dated February 8, 2007, and the documents cited therein.
3. My invention includes a method of producing an injection molded conductor carrying means. The method includes using a first material that is in principal able to be metallized and second material that is metallizable after being activated by a laser beam. A first substrate is

formed of the first material and is partially covered by a second substrate formed of the second material. A metallization pattern is formed by laser activation, and that pattern at least partially adjoins one or more uncovered portions of the first substrate. A metallized layer is deposited simultaneously on the metallization pattern and the uncovered portion.

4. In forming an injection-molded conductor carrying means, material requiring laser beam pretreatment to be metallizable is typically used for forming fine conductive patterns with very narrow conductive paths. Because of the very narrow width of a laser beam, thin tracks may be activated which are used to form narrow metal conductive paths.

5. Since fine conductor paths can be formed on laser activated material, the material is typically used for producing electronic layout of circuitry where it is desired to electrically connect many electronic components on a very small area. For example, this process is used for electrically connecting a microchip on a conductor carrier means. Such chips have contact wires in close proximity to each other. In order to connect the microchip to a substrate it is required that the metallized connecting pattern for the microchip be very narrow with the single pads being placed very close in side-by-side arrangement.

6. A connector carrier means in addition to supporting small electrical components, also includes large components such as connecting sleeves, spring contacting elements, plugs or other connection elements which permit the circuitry to communicate with the macro environment. Connecting these large components to the fine conductors of the micro electrical components is quite difficult to handle.

7. Normally, connecting fine conductors to more course electrical components is done by soldering wires of the components to the conductors. But this is difficult because of the very thin metallized structure of the conductors on the carrying means. One possible way to connected the different components is to use laser activated material and create larger metallization areas on the conductor carrier means by laser activating large areas of material using back and forth laser

movement. However, this process is time consuming and expensive and does not create smooth planar activated areas.

8. Using material that is in principal metallizable or platable (i.e., no laser activation is needed) to create a metallized pattern normally requires the use of masks for covering the areas not to be metallized. By using such masks it is easy to define large uncovered areas on which, in a subsequent metallization step, a metal layer is deposited. However, such masks are not able to create metallizable tracks in the fine pattern desired for use with small electronic components. Therefore, using a material which is in principal platable has the limitation of not being able to make the very fine patterns which are desirable for mounting certain complex electronic components and is not an alternative to laser beam-activated method.

9. My invention provides unexpected and beneficial results in forming a conductor carrying means through the combined use of material that is in principal metallizable and material that is metallizable only after laser pretreatment. By combining the two different materials, it has been found that through a single metal deposition step both fine conductors for connection with electronic components and coarse structured areas for the connection of large electrical components can be created on the same injected molded conductor carrying means. Since fine metallization patterns generated by the laser activation and the metallization pattern defined by uncovered areas of the principally metallizable material are adjoining each other in at least some regions, a continuous metallized layer extending over both kinds of metallization patterns is able to be generated by the single deposition step. Therefore, metallized patterns of disparate sizes can be created and joined in one step.

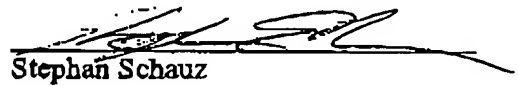
10. The present invention solves problems associated with the prior art. By combining both materials, there is no need to use separate soldering measures or to use wires for connecting metallized areas of different sizes. Such disparate elements can now be connected by a single metallization step. In addition, the time and expense of using a laser to create large activated areas is also avoided.

11. The beneficial results created by the present invention could not have been expected by one skilled in the art.

12. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true. Further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application of any patent issued thereon.

Respectfully submitted,

Dated: 04.04.2007


Stephan Schauz